

REMARKS

Claims 1-4 are now pending in this application.

The amendments to the specification are minor. No new matter has been added to this application by way of the amendments.

Favorable action and early allowance of the claims are respectfully requested.

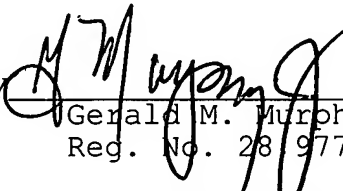
If the Examiner has any questions concerning this application, he is requested to Benjamin Schroeder, Reg. No. 50,990, at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By


Gerald M. Murphy, Jr.
Reg. No. 28,977

Post Office Box 747
Falls Church, VA 22040-0747
(703) 205-8000

GS
GMM/TBS/bsh

Attachment: Version with Markings to Show Changes Made

VERSION WITH MARKING TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning on page 3, line 23, bridging page 4, line 25, has been amended as follows:

In recent years, in accordance with the above-mentioned requirements, remarkable progress has been made in the technology for the electrolysis of an alkali metal chloride using an ion exchange membrane (i.e., the technology for the ion exchange membrane [method] electrolysis). The improvements are especially remarkable in the performances of the ion exchange membranes, electrodes and electrolytic cells. At the time the ion exchange membrane [method] electrolysis was introduced for the first time, the electricity consumption of the ion exchange membrane [method] electrolysis performed at a current density of 30 A/dm² was as large as 2,600 kW per ton of NaOH produced. However, as a result of the above-mentioned great progress in the art in recent years, the electricity consumption of the ion exchange membrane [method] electrolysis performed at a current density of 30 A/dm² has been reduced to about 2,000 kW or less per ton of NaOH produced. On the other hand, it has recently been strongly desired that the size of the equipment for performing the electrolysis is increased, energy is saved, and efficiency is increased. In addition, it has also been desired for the electrolysis to be able to be performed at a

current density as high as 50 A/dm² or more, which is far higher than the above-mentioned current density 30 A/dm² which was the possible maximum value at the time of the introduction of the ion exchange membrane [method] electrolysis.

The paragraph beginning on page 10, line 24, bridging page 12, line 24, has been amended as follows:

In this situation, the present inventors have made extensive and intensive studies with a view toward developing a unit cell for use in a bipolar, filter press type electrolytic cell used for performing the ion exchange membrane [method] electrolysis, wherein the unit cell is advantageous in that a gas and an electrolytic solution can be discharged in a condition wherein the gas and the electrolytic solution are substantially completely separated from each other, so that, even when the electrolysis is performed at a current density as high as 50A/dm² or more, the occurrence of vibrations in the cell can be prevented, thereby preventing the occurrence of a breakage of an ion exchange membrane. As a result, it has surprisingly been found that discharge of a gas and a liquid in a substantially completely gas-liquid separated condition can be achieved when the electrolysis of an aqueous alkali metal chloride solution is performed by using a bipolar, filter press type electrolytic cell which employs a unit cell comprising: an anode-side pan-shaped body having an

anode compartment and an anode-side gas-liquid separation chamber which extends over the entire length of the upper side of the anode compartment, and a cathode-side pan-shaped body having a cathode compartment and a cathode-side gas-liquid separation chamber which extends over the entire length of the upper side of the cathode compartment, wherein the anode-side pan-shaped body and the cathode-side pan-shaped body are disposed back to back, wherein the anode-side and cathode-side gas-liquid separation chambers have perforated bottom walls separating the anode-side and cathode-side gas-liquid separation chambers from the anode compartment and the cathode compartment, respectively, wherein a bubble removing partition wall having an apertured segment is disposed at least in the anode-side gas-liquid separation chamber of the anode-side and cathode-side gas-liquid separation chambers and extends upwardly of the perforated bottom wall of the gas liquid separation chamber, wherein the bubble removing partition wall extends along the entire length of the gas-liquid separation chamber to partition the gas-liquid separation chamber into a first passage A formed on the bottom wall in a perforated area thereof and a second passage B which is formed on the bottom wall in a non-perforated area thereof and which communicates with a gas and liquid outlet nozzle, and wherein the apertures of the apertured segment of the bubble removing partition wall are positioned at least 10 mm above the inside surface of the bottom

wall of the gas-liquid separation chamber. The present invention has been completed, based on this novel finding.

The paragraph beginning on page 37, line 22, bridging page 38, line 3, has been amended as follows:

When an apertured plate made of the above-mentioned metal is attached to a non-apertured plate to obtain bubble removing partition wall 3, an expanded metal, a punched metal having circular apertures or [square-shaped] square-shaped apertures, a wire net, a wire mesh, a foam metal or the like can be used as the apertured plate.